

Northern Arizona Healthcare Case Study: Improving Sepsis Care



Northern Arizona Healthcare

Introduction

Based in Flagstaff, AZ, Northern Arizona Healthcare is home to two hospitals—Flagstaff Medical Center, with 268 licensed beds, and Verde Valley Medical Center, located in Cottonwood, AZ, with 98 licensed beds. In its continual efforts to improve the quality of patient care, the Quality Department of Northern Arizona Healthcare determined the need to focus on managing patients presenting to their emergency department with sepsis. Recognizing that working directly with performance improvement experts would help ensure success, the Northern Arizona Team then chose to partner with the Zynx Health Performance Improvement Team.

Stated Objective

Like most hospitals and health systems, efforts have been ongoing at Northern Arizona Healthcare to improve sepsis care. The management of sepsis has changed considerably over the past several years, with continued research a part of the picture. The Quality Department at Northern Arizona had already utilized Zynx Health solutions, including Knowledge Analyzer and ZynxOrder, to optimize the content of their sepsis order sets to reflect the most current evidence-based practices. Having done this, the team wanted to take further steps to improve sepsis care with a rapid cycle improvement (RCI) project.



The Project Begins

Following preliminary meetings with the Zynx Health Performance Improvement Team, the members of the Quality Department at Northern Arizona Healthcare took a close look at their internal data and concluded that improving the timely administration of antibiotics would be a good RCI project. Zynx Health's evidence supports this approach well since it identifies timely antibiotic administration among its "Gold Key" interventions. Zynx

Gold Key evidence identifies interventions that have been clearly demonstrated to improve important outcomes. Based on medical literature, the timely delivery of antibiotics to patients with sepsis has been directly associated with reduced sepsis mortality.

Next, the Quality Department Team performed a deep analysis and determined that although antibiotic orders were generally placed quickly, there was an unnecessarily long delay in administering to the patient. This realization enabled the Quality Department Team to target their efforts.

The Quality Department Team members also found that its sepsis triage screen—known as “Think Sepsis” and embedded into the emergency department triage process—was underutilized. Because this screening tool is key to early identification of patients with possible sepsis, it also ties directly to antibiotic administration. Consequently, the team concluded that a second objective—improving the utilization of the “Think Sepsis” triage screen to facilitate meeting the goal of reducing the time to antibiotic administration—was required.

Having determined the focus of their project, the Quality Department Team and Zynx Health’s Performance Improvement Team collaborated on the next steps. The Zynx Health Performance Improvement Team carefully assessed Northern Arizona’s focus areas and scheduled a series of fact-finding meetings with key individuals in the healthcare system. Next, the Zynx Performance Improvement Team arranged for a launch meeting with the Northern Arizona Project Team to guide them in establishing an RCI project tailored to their unique circumstances.



"The Zynx team was incredibly engaging and truly seems to understand the real issues that hospitals face with sepsis care. They seemed optimistic that we can have success with this project."

Northern Arizona Project Team Member

The Rapid Cycle Improvement Project Launch Meeting

During a two-hour meeting with Northern Arizona Healthcare’s Sepsis Improvement Project Team, the Zynx Health Performance Improvement Team presented its findings and recommendations for the RCI project. The presentation included an in-depth analysis of their current state and proposed several recommendations tailored to Northern Arizona’s unique needs.

The launch meeting agenda included:

- Education about the RCI process.
- Developing Specific, Measurable, Achievable, Relevant, and Time-based (SMART) goal statements.
- Effective strategies to address these goals with associated metrics to be monitored.
- Several possible tactics to employ that could directly result in performance improvement toward their goals.
- An overview of various project management tools to organize and keep track of the project.
- A proprietary spreadsheet specifically designed for data entry that would track and compare baseline data against the data obtained during the RCI project period.

During the meeting, a healthy discussion of the strategies and tactics occurred. Participation was excellent. This discussion resulted in several important insights into Northern Arizona's current processes and how best to address them. At the end of the meeting, Northern Arizona's Project Team was charged with determining which tactics they would utilize and establishing a formal start date. Weekly touchpoint meetings were scheduled to enable designated Project Team members to review data, project progress, and identify next steps. The Zynx Health Performance Improvement Team was also available to meet ad hoc with the Northern Arizona Team should questions arise that required an immediate response.

The Rapid Cycle Improvement Project in Action

Within a short period of time, Northern Arizona's Project Team decided to utilize several tactics that were discussed during the launch meeting along with others. The tactics selected were:

- Provision of education to nursing staff regarding the use and importance of the "Think Sepsis" screen at triage.
- Placement of "Think Sepsis" reminders.
- Daily change of shift huddles on sepsis identification/management topics.
- Internal transparency of data regarding sepsis management every week.
- Encouragement of communication from RN to practitioner when sepsis is suspected, and from practitioner to RN when antibiotics are urgently needed.
- Institution of new procedures designed to reduce antibiotic administration time for the ED Medical Staff to utilize when ordering antibiotics on patients at risk of sepsis. These new procedures included one or more of the following:
 - The expectation that the ordering physician would personally notify the patient's nurse or the ED unit clerk after placing an antibiotic order to expedite its administration.
 - The use of EHR functionality to highlight to the nurse that an antibiotic had been ordered.
- Reimplementation of a sepsis management team.



After deploying these tactics, members of the local Project Team held weekly meetings with the ED staff to continually emphasize these new procedures, provide feedback on performance, and modify the processes as necessary. Clinicians in the ED were supportive. They recognized the importance of the project and could easily see that the tactics being promoted would be both effective and achievable. Zynx Health's Team meets weekly with the local Project Team to discuss progress and barriers.

Results

This project aimed to increase the percentage of septic patients who received antibiotics within 1 hour or 3 hours, depending on the severity of illness, at the time of ED admission. In a 6- to 8-week RCI project, these longer-term goals are often not expected to be met. However, during this project, there was demonstrable

improvement in several metrics that tie directly to these goals:

- For individuals in the 1-hour population* who received antibiotics, the door-to-antibiotic administration time dropped from 50.5 to 45.2 average minutes, a **10.5% improvement**.
- A **9.2% improvement** in timely antibiotic administration in the 3-hour population.
- A **15.4% improvement** in utilizing the “Think Sepsis” screen during ED triage.

Additionally, there was progress made in other important metrics that were not specifically targeted by the goals of the project but that improved, likely because of the increased attention to sepsis management:

- A **122.5% improvement** in SEP-1 bundle compliance rates (40% to 89%).
- A **9.5% improvement** in the percentage of time that blood cultures were obtained before antibiotic administration in the 1-hour population.

These are significant process improvements, and with continued effort and refinement, Northern Arizona Healthcare is on track to improve its overall management of septic patients and lower their sepsis mortality rate.

Limitations

The relatively short implementation timeline of 6 weeks is a limitation of the study. Because of this, the number of patients included in the study was relatively small. The data collected included data from both Northern Arizona Healthcare facilities and was not separated. This limits the possibility of fully understanding each facility's performance, limiting the ability to identify additional improvement opportunities.

The Value of Collaborating with the Zynx Health Performance Improvement Team

A post-engagement survey of the Northern Arizona Project Team revealed that the involvement of the Zynx Performance Improvement Team was believed to be helpful and of significant value. Survey respondents also indicated a general willingness to refer Zynx Health Performance Improvement Services to other organizations.

Many healthcare organizations struggle with improving their performance on various quality measures that are tied directly to providing the best possible patient care. Improving these quality metrics can translate into important goals such as reducing sepsis-related mortality, improving patient safety, and reducing lengths of stay.

Although most organizations understand the inherent value of providing care based on the latest evidence, many are unsure how to improve performance. This is where performance improvement science is vital. Working with the Zynx Health Performance Improvement Team effectively enables a hospital

"The Zynx Team helped us to jumpstart an important initiative for Northern Arizona Healthcare."

Floye Bradford, MS, MSN, RN, CPHQ
Director of Quality
Northern Arizona Healthcare

*Patients placed into the group expected to receive antibiotics within 1 hour were those with:

- BP less than 90 OR
- ED Glasgow Coma Scale not 15 OR
- Initial lactate greater than 4.

or clinic to combine evidence-based practices with performance improvement science—a powerful combination, as the above case study demonstrates. The improvements made by Northern Arizona Healthcare exemplify how intelligent design and thoughtful execution can result in real gains that can directly affect the lives of their patients. Additionally, improving the quality of patient care typically results in improvements in efficiency, resulting in additional benefits such as length of stay reductions and increased reimbursement rates.

Northern Arizona’s Success Can Be Yours

The Performance Improvement Team at Zynx Health can help your organization achieve measurable gains economically.

Our services include:

- Rapid Cycle Improvement Engagements (6-8 weeks)
- Medium- and Long-Term Engagements (3-12 months)
- Site Evaluation/Readiness to Engage in Quality Improvement/Practice Improvement (QI/PI)
- Performance Improvement Training
- Patient Safety
- Data Analysis



Visit zynxhealth.com or phone 888.333.9969 to speak with a member of our team to discuss how we can help your organization improve processes in a way that benefits your staff and their patients.



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